

U.S. ARMY RESEARCH OFFICE
BROAD AGENCY ANNOUNCEMENT

DAAD19-00-R-0009

**VIRTUAL PARTS ENGINEERING
RESEARCH CENTER**

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I. INTRODUCTION

The U.S. Army Research Office (ARO) solicits proposals for strategic initiatives to facilitate advances in technologies that will lead to improved capabilities to sustain/maintain engineered systems.

II. BACKGROUND

The specific objective of this research initiative is to facilitate advances in technologies that will lead to improved capabilities to sustain/maintain engineered systems. It is intended that this effort will help to insure that future system needs (for system components and/or sub-systems) will be satisfied with improvements in cost, schedule, and quality (as compared to presently, and throughout the life-cycle of these engineered systems). More generally, the results of research funded via this initiative are expected to contribute to enabling advances in the development and integration of infrastructure technologies leading to more acceptable (and/or more capable) computer-based environments for the design, development, and production of engineered systems and their component parts.

The scope of appropriate research topics for this BAA, includes topics that range from those addressing the creation, archiving, and utilization of design and production data/information, to those focusing on the use of virtual design-space to effect a system/part design and production capability. The range of appropriate topics also includes those that address the general issues of integrated, interactive and machine-based software/system engineering environments for modern and advanced approaches to modeling and simulation, visualization, data-access/utilization methodologies (machine-learning, intelligent agents, multi-media, etc.); however, any of these proposed software/system engineering research and data/information-centric efforts must have obvious connections to the physical-system/parts manufacturing focus of this BAA.

The current national trends of corporate downsizing, and consolidation of operations, along with the need to consider extending the useful-life of engineered systems, has exacerbated the problem of system maintenance. These trends, and the related reductions in the number of manufacturing resources, have led to a critical need to more aggressively address the problem of “parts-replacement.” In spite of the fact that there have been significant technological advances in the areas of CAD/CAM, there is a need for continued fundamental research that leads to a more complete, enhanced, and integrated machine-based solution to the issues of system maintenance and the availability of replacement components. Hence, this initiative is intended to contribute to the improvement of the suite of technologies supportive of the initial design of systems, and the manufacture of parts for these engineered systems throughout their life-cycle.

Given the diverse issues addressed, within the scope of this initiative, and the eventual need to integrate the “partial solutions” (existing, and to be developed), it is appropriate for any proposed research effort to consider collaborations, and/or integration of complementary efforts/work. Such connections to other on-going work, or the available partial-solutions, should dramatically contribute to the potential value-added of any proposed new research effort. This is particularly important in the areas of data/information management and utilization, and in the use of advanced software/system engineering tools.

Design in the 21st Century

The future engineering infrastructure will be distributed and collaborative, where designers, process planners, manufacturers, clients, and other related domain personnel communicate and coordinate using a global web-like network. The designers may be using heterogeneous systems, data structures, or information models, whose form and content may not be the same across all disciplines. To successfully

implement such a computer-supported collaborative design environment, we need to address four areas: 1) applications; 2) standards; 3) infrastructure; and 4) organization. Brief descriptions of the first three areas are presented below.

1) Applications

CAD applications supporting design can be categorized into three types -- traditional, knowledge-based, and immersive. Traditional CAD systems evolved out of an attempt to provide better drafting aids. In these systems, the designer uses a computer to develop either 2D or 3D models of the design. Traditional CAD systems (such as Pro/Engineer) provide comprehensive tools for generating geometric forms, which encourages designers to come up with a form first and think about function later (i.e., *form-to-function transformation*). However, this approach can result in non-optimal and non-competitive designs. Closely related to traditional CAD systems are traditional computer-aided engineering (CAE) packages, which primarily focus on analysis, in particular finite element analysis.

Tools for helping a designer think in terms of function need to be developed; form should subsequently result from function (i.e., *function-to-form transformation*). Knowledge-based design systems implement this paradigm by first focusing on the symbolic aspects of design and later mapping the symbolic structure to a geometric model. They can also capture the various semantic relationships between design objects. Essentially, knowledge-based systems use techniques developed by artificial intelligence researchers to capture the knowledge of expert designers in a computer. In immersive CAD applications, the human being becomes part of the design by using various immersive environments, including haptic, visual, and speech interfaces. Immersive CAD systems can aid in evaluating the manufacturability of designs.

In summary, traditional CAD systems require the designer to completely specify all geometric details, while knowledge-based systems aid in the design generation, and immersive environments allow a designer to interact with and become immersed in the CAD world.

2) Standards

CAD applications generally do not use the same format for data input and output. For example, Boeing's customers require that it use engines from different manufacturers, such as GE, Pratt and Whitney, and Rolls Royce. Boeing uses CATIA as the CAD tool, while the suppliers use different CAD systems. Each of these systems has its own unique data format and interoperability is a major concern. For n systems we need $n(n-1)$ translators, for effective interoperability. A solution to this problem is to use a neutral format and make all the CAD applications to output into this format. Doing so will reduce the number of translators to $2*n$, i.e., for each CAD system we will need two translators — one from the CAD system to the neutral format and the other from the neutral format to the CAD.

A standard of primary interest to design is ISO 10303, also known informally as STEP (Standard for the Exchange of Product model data) and developed by the International Organization for Standardization (ISO) TC 184/SC4. Its intention is to enable the exchange of product model data between different modules of a product realization system, or enable the sharing of that by different modules through the use of a common database. The first parts of STEP to achieve International Standard status were published in 1994, but many other parts have since been published or are under development and will eventually be added to the standard. Recent updates (and other relevant details) can be found at the following website: <http://www.nist.gov/sc4>.

The STEP AP most relevant to traditional CAD systems is called AP 203 and is entitled “Configuration Controlled 3D Designs of Mechanical Parts and Assemblies.” This protocol defines the

data exchange of geometric entities and configuration control of products. Other protocols of interest to part definitions are AP 209 (finite element analysis) and AP 224 (process planning).

Below, we summarize the various protocols involved in the interoperability between various types of CAD systems and between CAD systems and manufacturing software.

Between traditional CAD systems. The various extensions that could be used with AP 203 would include exchange of feature, constraint, parameterization, and design history information.

Between CAD systems and analysis packages. This would involve a mapping from CAD data to a neutral representation for input to an appropriate analysis package. The neutral representation can be based on AP 209, with possible extensions, such as DT_NURBS (Extensions to Non-uniform Rational B-Splines developed by Boeing for the David Taylor Research Center).

Between knowledge-based design systems and traditional CAD systems. Knowledge-based design tools concentrate on the generation of a symbolic structure, using various types of objects and relationships. Mapping from this symbolic structure to traditional CAD requires appropriate interface specifications.

Between traditional CAD and immersive CAD systems. Immersive CAD systems generate certain process constraints, such as trajectory and assembly mating constraints. The interface between immersive CAD and traditional CAD systems requires extensions to appropriate STEP standards, such as Part 42 (Geometric and topological representation), Part 44 (Product structure configuration), and AP 203.

The above protocols address intra-design interoperability. Research on the interfaces between design and manufacturing (i.e., inter application interoperability) could include the following:

Solid interchange format for Layered Manufacturing (SIF-LM). This task involves the use of STEP's generic resources for the development of a standard for the exchange of CAD data with Rapid Prototyping systems, developed for producing physical structures in layers (e.g., 3D Printing).

Between CAD systems and assembly planning systems. This task involves the development of exchange standards for data interchange between traditional CAD systems, immersive CAD systems, and assembly process planning. Representative data would include the creation of trajectory, component orientation information (process data), swept volumes, and assembly sequencing data that can be merged with part representation.

Between CAD and process planning/manufacturing systems. Considerable research has been performed on mapping traditional CAD data on to process planning systems. However, this work has met with limited success. One problem with the current standards is the lack of integration between CAD data output and process planning input. For example, the primary focus of STEP AP 203 is the interoperability between traditional CAD systems, while the focus of STEP AP 224 (Mechanical product definition for process plans using machining features) has been on input to process planning systems. To achieve truly collaborative design and engineering, exchange representations of both design and process information must support multiple levels of abstraction. For example, during the early conceptual design phase (essentially a knowledge-based activity), it is important to understand the trade-offs and implications of high-level design decisions. Symbolic descriptions of designs that are not yet defined geometrically can yield enough input to determine many of the characteristics of the manufacturing process underlying ball-park cost estimates.

3) Infrastructure

The various applications in a collaborative product development environment will be coordinated by a work flow management system, which acts as a project manager. These applications will be connected to one another through the design net, which provides the infrastructure for high bandwidth communications. The applications will retrieve design data and knowledge from distributed design repositories and the evolving design (or designs) is stored in a database. This database will provide various snapshots of the evolving design, with design artifacts and associated design rationale stored at various levels of abstraction. Finally, design applications will communicate with other manufacturing applications through various other nets, such as production, process planning, and user networks. One key aspect of the above infrastructure is the use of design repositories, as engineers require access to various kinds of design information. Design repositories make use of research in knowledge-based design to facilitate the representation, capture, sharing, and reuse (search and retrieval) of corporate design knowledge.

III. SPECIFIC RESEARCH AREAS OF INTEREST

Legacy Systems/Parts: Create complete digital versions of legacy systems/parts. “Scanning” to create look-alike parts for CAD/CAM application is usually not sufficient for the production of acceptable parts. Improvements in design-environments, the integration of tool-sets, and innovative use of engineering data/information are needed to address the evaluation of non-geometric engineering concerns as relates to the required physical attributes of these systems/parts.

Data Acquisition/Conversion/Management: Automate the conversion of legacy drawings to vector formats, allowing for 3-D CAD/CAM modeling.

Design Archiving and Reuse: Develop representation and storage techniques to extend traditional part databases to include formal data/information models, structured text (specialized languages for representing function, design rules, logical expressions), mathematical simulation models, animations, video, and other types of information. Design reuse can be facilitated by libraries of self-configuring components. This will require the development of knowledge templates to characterize existing designs and serve as the framework for acquiring new design knowledge efficiently. The development of techniques to translate this knowledge so that it can be reused in component libraries will also be required.

Design Rationale: Capture design rationale behind system/part design. Advances in the development of formal (including mathematical) representations are needed to capture the intent and logic behind a design (including functions to satisfy design constraints and the trade-offs justifying it), the processes that can produce it, and the critical parameters needed to estimate cost. These representations must be modular and permit the extraction of parts of a complete model and the ability to collect and integrate previously unrelated component models into a whole.

Ontologies for Interoperability: Develop formal taxonomies of engineering parts and processes. Current manufacturing software integration efforts are usually based solely on how information is represented (the syntax or terminology) without a description of what the information means (the semantics). With the growing complexity of information and the increasing need to completely and correctly exchange information among different systems, there is a need for precise and unambiguous capture of the meaning of engineering concepts.

Virtual Prototyping Tools: Develop tools for visualization, modeling, and simulation of parts and systems, to facilitate design iteration and exploration. Such tools should have facilities to model behaviors, both at the part level and at the system level.

Software Agents: Create software/Intelligent agents for configuration management, constraint management, content-based information retrieval, innovative design and design decision-support, and complexity management.

IV. GENERAL INFORMATION

The above research topics are some of those expected to contribute to implementing the overall tasks of modern software/system engineering, system/parts design (and/or redesign), reverse-engineering, and manufacturing engineering. Any proposal submitted under this BAA should address a coherent/integrated sub-set of the topics cited above, or at least one “open” critical research topic. Also, any proposed work should suggest some means of evaluating the “value-added” of the work to be accomplished. Collaborations allowing the leveraging of other-funded efforts, the utilization/integration of existing technologies in innovative ways, and “teaming” (internal and/or external) supported via this initiative are encouraged. All representation and standards related work should be leveraged with work in appropriate governmental agencies.

Prior to any award the government, at its option, may elect to arrange site visits to any institutions responding to this BAA.

Within 3 months of an award there shall be a “Virtual Parts Engineering Technology” Information/exchange and kick-off meeting at the site of the award. It is intended that this meeting be attended by the cognizant personnel of the several government agencies interested in this effort, as well as commercial vendors of CAD/CAM systems. This meeting is envisioned to be a 1 or 2-day meeting, with the details to be arranged subsequent to an award.

V. CONDITIONS

A. Eligibility

The competition is specifically for strategic initiatives to facilitate advances in technologies that will lead to improved capabilities to sustain/maintain engineered systems as described in Section II. Potential offerors are advised to read this announcement carefully. It explains the agencies’ research needs upon which the topic is based and the terms and conditions of the competition.

Proposals may be submitted by degree-granting universities or nonprofit organizations. Proposals are encouraged from Historically Black Colleges and Universities (as determined by the Secretary of Education to meet requirements of 34 CFR Section 608.2) and from Minority Institutions, defined as institutions meeting criteria contained in 10 U.S.C. 2323(a)(1)(C) which reads: “minority institutions (as defined in section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)), which, for the purposes of this section, shall include Hispanic-serving institutions (as defined in section 316(b)(1) of such Act (20 U.S.C. 1059c(b)(1)).”

Federal laboratories, Federally Funded Research and Development Centers, and academic institutions that are federal government organizations (e.g., Naval Postgraduate School) may participate, but they may not receive funds awarded through this competition.

This is to notify potential offerors that the grant that is awarded under this announcement to an institution of higher education shall include the following clause:

As a condition for receipt of funds available to the Department of Defense, DoD, under this award, the recipient agrees that it is not an institution of higher education (as defined in 32 CFR part 216) that has a policy of denying, and that it is not an institution of higher education that effectively prevents, the Secretary of Defense from obtaining for military recruiting purposes: (A) entry to campuses or access to students on campuses; or (B) access to directory information pertaining to students. If the recipient is determined, using procedures in 32 CFR part 216 to be such an institution of higher education during the period of performance of this agreement, and therefore to be in breach of this clause, the Government will cease all payments of DoD funds under this agreement and all other DoD grants and cooperative agreements, and it may suspend or terminate such grants and agreements unilaterally for material failure to comply with the terms and conditions of award.

If your institution has been identified under the procedures established by the Secretary of Defense to implement section 558, then: (1) no funds available to DoD may be provided to your institution through any grant, including any existing grant; (2) as a matter of policy, this restriction also applies to any cooperative agreement; and (3) your institution is not eligible to receive a grant or cooperative agreement in response to this solicitation.

Questions regarding the administrative content of this BAA may be addressed to ARO at (919) 549-4375.

Technical points of contact (TPOC) for this BAA, from the Engineering Sciences Division of ARO, are as follows:

Dr. David Hislop
Telephone: (919) 549-4255
Email: hislop@aro-emh1.army.mil

Dr. Julian Wu
Telephone: (919) 549-4254
Email: jjwu@aro-emh1.army.mil

B. Proposal Submission

1. Offerors are **REQUIRED** to submit complete proposals electronically to the following address: BAA@arl.aro.army.mil

2. Offerors **MUST** use **Microsoft WORD** to the greatest extent possible for complete proposals. When submitting electronically, offerors **MUST** submit one copy of an **ORIGINALLY** signed Form 51 and Form 52 or 52A, to be received at this office no later than the date specified in B.2. Approved, signed, and completed proposals must be received by **4:00 PM EDST on Friday, August 11, 2000**. Do not submit the proposal to the individual TPOC; this could delay the receipt and review of the proposal. Proposals received after the deadline will be handled in accordance with Appendix A, Late Submissions.

Send proposals to:

U. S. ARMY RESEARCH OFFICE
ATTN: AMSRL-RO-RI (00-R-0009)
P.O. BOX 12211
RESEARCH TRIANGLE PARK, NC 27709-2211

Physical Address: U.S. ARMY RESEARCH OFFICE
ATTN: AMSRL-RO-RI (00-R-0009)
4300 SOUTH MIAMI BOULEVARD
DURHAM, NC 27703-9142

Please note that proposals delivered by commercial carriers are considered “hand carried” and no exceptions can be made which allow these proposals to be considered, if for any reason they are received after the deadline. Offerors are advised that on several recent occasions proposals delivered by commercial carriers have been misrouted or delayed in shipment and as a result have been rejected without being evaluated.

3. Proposals will be evaluated using the criteria set forth in Section VI. **To be eligible for consideration, all copies of the proposal MUST bear ARO Form 51, as a cover page.**

Acknowledgment of receipt of a proposal under this solicitation will be accomplished via the Acknowledgment Receipt in Appendix B. To assure prompt acknowledgment of receipt of your proposal, please detach the receipt in Appendix B, address it to the Principal Investigator or other company/university official, affix proper postage, and clip to the original proposal (please do not tape or staple the receipt). Acknowledgment receipts will be mailed within approximately one week of the closing date. No separate acknowledgment will be provided. Please ensure that the acknowledgment receipt has the proper address and postage and that the receipt is attached to the signed, original copy of the proposal.

C. Content

The proposal must be signed, completed, and self-contained to qualify for review. The Department of Defense is concerned with research in critical areas of science and engineering, with science and engineering education, and with the availability of equipment required to meet research objectives. For this reason, proposals must adequately describe the technical objectives and approaches, support of any students, and expenditures for equipment, all of which will be evaluated by scientific reviewers in accordance with the Evaluation Criteria and Selection Process.

Proposals should include:

BUDGET PROPOSAL (including DD Form 1861):

1. Each proposal must contain a budget for each year of support requested and a cumulative budget for the full term of requested support. The budget form (Form 99), found at the ARO website, may be

reproduced as needed. Locally produced versions may be used, but you may not make substitutions in prescribed budget categories nor alter or rearrange the cost categories as they appear on the form. The proposal may request funds under any of the categories listed so long as the item is considered necessary to perform the proposed work and is not precluded by applicable cost principles. In addition to the forms, the budget proposal should include up to five (5) pages of budget justification for each year. A summary budget page should be included. The documentation pages should be titled "Budget Explanation Page" and number chronologically starting with the budget form. The need for each item should be explained clearly.

2. All cost data must be current and complete. Costs proposed must conform to the following principles and procedures:

Educational Institutions: OMB Circular A-21

Nonprofit Organizations: OMB Circular A-122*

Commercial Organizations: FAR Part 31, DFARS Part 231, FAR Subsection 15.403-5, and DFARS Subsection 215.403-5

**For those nonprofit organizations specifically exempt from the provisions of OMB Circular A-122, FAR Part 31 and DFARS Part 231 shall apply.*

3. The itemized budget(s) must include the following:

(a) Direct Labor: Show the current and projected salary amounts in terms of man-hours, man-months, or annual salary to be charged by the principal investigator(s), faculty, research associates, postdoctoral associates, graduate and undergraduate students, secretarial, clerical, and other technical personnel either by personnel or position. State the number of man-hours used to calculate a man-month or man-year. For proposals from universities, research during the academic term is deemed part of regular academic duties, not an extra function for which additional compensation or compensation at a higher rate is warranted. Consequently, academic term salaries shall not be augmented either in rate or in total amount for research performed during the academic term. Rates of compensation for research conducted during non-academic (summer) terms shall not exceed the rate for the academic terms. When part or all of a person's services are to be charged as project costs, it is expected that the person will be relieved of an equal part or all of his or her regular teaching or other obligations. For each person or position, provide the following information:

(1) The basis for the direct labor hours or percentage of effort (e.g., historical hours or estimates).

(2) The basis for the direct labor rates or salaries. Labor costs should be predicted upon current labor rates or salaries. These rates may be adjusted upward for forecast salary or wage cost-of-living increases that will occur during the agreement period. The cost proposal should separately identify the rationale applied to base salary/wage for cost-of-living adjustments and merit increases. Each must be fully explained.

(3) The portion of time to be devoted to the proposed research, divided between academic and non-academic (summer) terms, when applicable.

(4) The total annual salary charged to the research project.

(5) Any details that may affect the salary during the project, such as plans for leave and/or remuneration while on leave.

(b) Fringe Benefits and Indirect Costs (Overhead, General and Administrative, and Other): The most

recent rates, dates of negotiation, the base(s) and periods to which the rates apply must be disclosed and a statement included to identify whether the proposed rates are provisional or fixed. If the rates have been negotiated by a Government agency, state when and by which agency. **A copy of the negotiation memorandum should be provided.** If negotiated forecast rates do not exist, offerors must provide sufficient detail to enable the ARO to determine that the costs included in the forecast rate are allocable according to applicable OMB Circulars or FAR/DFARS provisions. Offerors' disclosure should be sufficient to permit a full understanding of the content of the rate(s) and how it was established. As a minimum, the submission should identify:

- (1) All individual cost elements included in the forecast rate(s);
- (2) Bases used to prorate indirect expenses to cost pools, if any;
- (3) How the rate(s) was calculated;
- (4) Distribution basis of the developed rate(s);
- (5) Bases on which the overhead rate is calculated, such as "salaries and wages" or "total costs,"
and
- (6) The period of the offeror's fiscal year.

(c) Permanent Equipment: If facilities or equipment are required, a justification why this property should be furnished by the Government must be submitted. State the organization's inability or unwillingness to furnish the facilities or equipment. Offerors must provide an itemized list of permanent equipment showing the cost for each item. Permanent equipment is any article or tangible nonexpendable property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit. The basis for the cost of each item of permanent equipment included in the budget must be disclosed, such as:

- (1) Vendor Quote: Show name of vendor, number of quotes received and justification, if intended award is to other than lowest bidder.
- (2) Historical Cost: Identify vendor, date of purchase, and whether or not cost represents lowest bid. Include reason(s) for not soliciting current quotes.
- (3) Engineering Estimate: Include rationale for quote and reason for not soliciting current quotes.

If applicable, the following additional information shall be disclosed in the offeror's cost proposal:

- (4) Special test equipment to be fabricated by the awardee for specific research purposes and its cost.
- (5) Standard equipment to be acquired and modified to meet specific requirements, including acquisition and modification costs, listed separately.
- (6) Existing equipment to be modified to meet specific research requirements, including modification costs. Do not include equipment the organization will purchase with its funds if the equipment will be capitalized for Federal income tax purposes. Proposed permanent equipment purchases during the final year of an award shall be limited and fully justified.

Grants, cooperative agreements, or contracts may convey title to an educational institution for equipment purchased with project funds. At the discretion of the contracting/grants officer, the agreement may provide for retention of the title by the Government or may impose conditions governing the equipment conveyed to the organization. The Government will not convey title to commercial contractors.

NOTE: It is the policy of the DOD that all commercial and nonprofit contractors provide the equipment needed to support proposed research. In those rare cases where specific additional equipment is approved for commercial and nonprofit organizations, such approved cost elements shall be "nonfee-bearing." In addition, commercial contractors are precluded from using contract funds to acquire facilities with a unit acquisition cost of \$10,000 or less (see FAR 45.302-1).

(d) Travel: Forecasts of travel expenditures (domestic and foreign) that identify the destination and the various cost elements (airfare, mileage, per diem rates, etc.) must be submitted. The costs should be in sufficient detail to determine the reasonableness of such costs. Allowance for air travel normally will not exceed the cost of round-trip, economy air accommodations. Specify the type of travel and its relationship to the research project. Requests for domestic travel must not exceed **\$2,500 per year per principal investigator**. Separate, prior approval by the ARO is required for all foreign travel (i.e., travel outside the continental U.S., its possessions and Canada). **Foreign travel requests must not exceed \$1,800 each per year per principal investigator**. Special justification will be required for travel requests in excess of the amounts stated above and for travel by individuals other than the principal investigator(s). Individuals other than the principal investigator(s) are considered postdoctoral associates, research associates, graduate and undergraduate students, secretarial, clerical, and other technical personnel. Additional travel may be requested for travel to Army laboratories and facilities to enhance agreement objectives and to achieve technology transfer.

(e) Participant Support Costs: This budget category refers to costs of transportation, per diem, stipends, and other related costs for participants or trainees (but not employees) in connection with ARO sponsored conferences, meetings, symposia, training activities, and workshops. Generally, indirect costs are not allowed on participant support costs. The number of participants to be supported should be entered in the parentheses on the budget form. These costs should also be justified in the budget justification page(s) attached to the cost proposal.

(f) Materials, Supplies, and Consumables: A general description and total estimated cost of expendable equipment and supplies are required. The basis for developing the cost estimate (vendor quotes, invoice prices, engineering estimate, purchase order history, etc.) must be included. If possible, provide a material list.

(g) Publication, Documentation, and Dissemination: The budget may request funds for the costs of preparing, publishing, or otherwise making available to others the findings and products of the work conducted under an ARO agreement, including costs of reports, reprints, page charges, or other journal costs (except costs for prior or early publication): necessary illustrations, cleanup, documentation, storage, and indexing of data and databases; and development, documentation, and debugging of software.

(h) Consultant Costs: Offerors normally are expected to utilize the services of their own staff to the maximum extent possible in managing and performing the project's effort. If the need for consultant services is anticipated, the nature of proposed consultant services should be justified and included in the technical proposal narrative. The cost proposal should include the names of consultant(s), primary organizational affiliation, each individual's expertise, daily compensation rate, number of days of expected service, and estimated travel and per diem costs.

(i) Computer Services: The cost of computer services, including computer-based retrieval of scientific, technical, and educational information may be requested. A justification/explanation based on the established computer service rates at the proposing organization should be included. The budget also may request costs, which must be shown to be reasonable, for leasing automatic data processing equipment. The purchase of computers or associated hardware and software should be requested as items of equipment.

(j) Subawards (subcontracts or subgrants): A precise description of services or materials that are to be awarded by a subaward must be provided. For subawards totaling \$10,000 or more, provide the following specific information:

- (1) A clear description of the work to be performed.
- (2) If known, the identification of the proposed subawardee and an explanation of why and how the subawardee was selected or will be selected.
- (3) The identification of the type of award to be used (cost reimbursement, fixed price, etc.).
- (4) Whether or not the award will be competitive and, if noncompetitive, rationale to justify the absence of competition.
- (5) A detailed cost summary.

If the total amount of the proposal exceeds \$500,000 and the offeror is a large business or an institute of higher education (other than HBCU/MI) and the resultant award is a contract, the offeror shall be prepared to submit a subcontracting plan for small business and small disadvantaged business concerns. A mutually agreeable plan will be included in and made a part of the contract.

(k) Other Direct Costs: Itemize and provide the basis for proposed costs for other anticipated direct costs such as communications, transportation, insurance, and rental of equipment other than computer related items. Unusual or expensive items shall be fully explained and justified.

DOD CENTRAL CONTRACTOR REGISTRATION DATABASE: In accordance with DOD policy, prospective contractors must be registered in the Central Contractor Registration (CCR) database prior to award of a contract, basic agreement, basic ordering agreement, or blanket purchase agreement. By submission of an offer resulting from this BAA, the offeror acknowledges the requirement that a prospective contractor must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this BAA. Even though this requirement is applicable to contractors, the ARL strongly encourages potential grant recipients to register also.

D. Length and Format of Proposals

1. Each proposal must be typed and not longer than 40 pages, inclusive of vitae and cover, but exclusive of budget. A page is defined as 8 1/2 x 11 inch paper, single-sided, with one-inch margins and a typeface of 10- or 12- pitch. All pages should be numbered consecutively, beginning with the first page after the proposal cover page. The proposal cover page, ARO Form 51 and the acknowledgment receipt (Appendix B) are included in the page count. The budget is not included in the page count. The technical portion must be typed, double-spaced, and should not exceed 30 pages. Proposals shorter than 40 pages are heartily encouraged. Separate attachments, such as institutional brochures or reprints, cannot be considered.

VI. EVALUATION CRITERIA AND SELECTION PROCESS

The selection process will be conducted based upon a technical peer review as described in Federal Acquisition Regulation Subparts 6.102(d)(2) and 35.016. To be eligible for an award of a research agreement, proposals submitted in response to this BAA will be evaluated using the factors listed below: (in descending order of importance):

- a. The overall scientific and/or technical merits of the proposal.
 - b. The potential contributions of the effort to the ARL mission and the extent to which the research effort will contribute to balancing the overall ARL research program.
 - c. The offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposed objectives.
 - d. The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or other key personnel who are critical to achievement of the proposed objectives.
 - e. The offeror's record of past performance.
 - f. The reasonableness and realism of proposed costs and any fee and the availability of funds.
2. Upon receipt of a proposal, the ARO staff will perform an initial review of its scientific merit and potential contribution to the Army mission and also determine if funds are expected to be available for the effort. Proposals not considered to have sufficient scientific merit or relevance to the Army's needs or those in areas for which funds are not expected to be available may be declined without further review.
3. It is the policy of the ARO to treat all proposals as privileged information prior to award and to disclose the contents only for the purpose of evaluation. Proposals not declined as a result of an initial review will be subject to an extensive peer review by highly qualified scientists from within the government and leading scientists and other preeminent experts outside the government. While the offeror may restrict the evaluation to scientists from within the government, to do so may prevent review of the proposal by those most qualified in the field of research covered by the proposal. The offeror must indicate on the appropriate proposal form (Form 52 or 52A) any limitation to be placed on disclosure of information contained in the proposal. Forms 52 or 52A can be obtained at <http://www.aro.army.mil>.
4. Each proposal will be evaluated based on the scientific merit and military relevance of the specific research proposed as it relates to the overall ARO program rather than against other proposals for research in the same general area.

VII. AWARDS

A total of at least \$1.933M is available under this solicitation. It is anticipated that this BAA will result in one (1) award, with a thirty-six (36) month performance period.

Reporting requirements for both contracts and grants will be as described in ARO Form 18. Reporting requirements may be viewed at the ARO website as follows: <http://www.aro.army.mil>.

VIII. CERTIFICATIONS

A. Certifications Required for Assistance Awards

1. Certification for Contracts, Grants, Loans, and Cooperative Agreements

By signing and submitting a proposal that may result in the award of a grant or cooperative agreement exceeding \$100,000, the prospective awardee is certifying, to the best of his or her knowledge and belief, that:

"(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure."

2. Certification Regarding Debarment, Suspension, and Other Responsibility Matters --Primary Covered Transactions

(1) By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

(2) The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

(3) The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to

other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

(4) The prospective primary participant shall provide immediate written notice to the department or agency to which this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(5) The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive order 12549. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

(6) The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

(7) The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

(8) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous.

A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(9) Nothing contained in the foregoing shall be construed to require establishment of a system or records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(10) Except for transactions authorized under paragraph 6 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters--Primary Covered Transactions*

"(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicated for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification such prospective participant shall attach an explanation to this proposal."

3. Certification Regarding Drug-Free Workplace Requirements

(1) By signing and/or submitting this application or grant agreement, the grantee is providing the certification set out below.

(2) The certification set out below is a material representation of fact upon which reliance is placed when the agency awards the grant. If it is later determined that the grantee knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the agency, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

(3) For grantees other than individuals, Alternate I applies.

(4) For grantees who are individuals, Alternate II applies.

(5) Workplaces under grants, for grantees other than individuals, need not be identified on the certification. If known, they may be identified in the grant application. If the grantee does not identify the workplaces at the time of application, or upon award, if there is no application, the grantee must keep the identity of the workplace(s) on file in its office and make the information available for Federal inspection. Failure to identify all known workplaces constitutes a violation of the grantee's drug-free workplace requirements.

(6) Workplace identifications must include the actual address of buildings (or parts of buildings) or other sites where work under the grant takes place. Categorical descriptions may be used (e.g., all vehicles of a mass transit authority or State highway department while in operation, State employees in each local unemployment office, performers in concert halls or radio studios).

(7) If the workplace identified to the agency changes during the performance of the grant, the grantee shall inform the agency of the change(s), if it previously identified the workplaces in question (see paragraph five).

(8) Definitions of terms in the Nonprocurement Suspension and Debarment common rule and Drug-Free Workplace common rule apply to this certification. Grantees' attention is called, in particular, to the following definitions from these rules;

Controlled substance means a controlled substance in schedules I through V of the Controlled Substances Act (21 U.S.C. 812), and as further defined by regulation (21 CFR 1308.11 through 1308.15);

Conviction means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

Criminal drug statute means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, use, or possession of any controlled substance;

Employee means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) All "direct charge" employees; (ii) all "indirect charge" employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirement; consultants or independent contractors not on the grantee's payroll; or employees of subrecipients or subcontractors in covered workplaces).

*Certification Regarding Drug-Free Workplace Requirements
(Alternate I - Grantees Other Than Individuals)*

"A. The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about--

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will--

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency in writing, within ten calendar days after receiving notice under paragraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grants officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under paragraph (d)(2), with respect to any employee who is so convicted--

(1) Taking appropriate personnel action against such employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

Check if there are workplaces on file that are not identified here."

(Alternate II - Grantees Who Are Individuals)

"(a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;

(b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing within 10 calendar days of the conviction, to every grants officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number (s) of each affected grant."

B. Certifications Required for Contract Awards

1. FAR 52.203-11 Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (APR 1991)

The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amend by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

2. FAR 52.209-5 Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters (MAR 1996)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that --

(i) The Offeror and/or any of its Principals--

(A) Are () are not () presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have () have not (), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them or: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are () are not () presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(I)(B) of this provision.

(ii) The Offeror has () has not (), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g.,

general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, any anytime prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

POST EMPLOYMENT CONFLICT OF INTEREST: There are certain post employment restrictions on former federal officers and employees, including special government employees (Section 207 of Title 18, U.S.C.). If a prospective offeror believes a conflict of interest may exist, the situation should be discussed with ARO procurement and legal personnel prior to expending time and effort in preparing a proposal.

SUBCONTRACTING: Pursuant to Section 8(d) of the Small Business Act [15 U.S.C. 637(d)], it is the policy of the Government to enable small business concerns to be considered fairly as subcontractors under all research agreements awarded to prime contractors and grantees.

EQUIPMENT: Normally, title to equipment or other tangible property purchased with contract funds shall be vested in nonprofit institutions of higher education or with nonprofit organizations whose primary purpose is the conduct of scientific research and if vesting will facilitate scientific research performed by the institution for the Government. Commercial organizations are expected to possess the necessary plant and equipment to conduct the proposed research. Deviations shall be made on a case-by-case basis.

DEFINITIONS:

1. Grant - A legal instrument which, consistent with 31 U.S.C. 6304, is used to enter into a relationship:

a. The principal purpose of which is to transfer a thing of value to the recipient to carry out a public purpose of support or stimulation authorized by a law or the United States, rather than to acquire property or services for the DOD's direct benefit or use.

b. In which substantial involvement is not expected between the DOD and the recipient when carrying out the activity contemplated by the grant.

2. Cooperative Agreement - A legal instrument which, consistent with 31 U.S.C. 6305, is used to enter into the same kind of relationship as a grant (see definition "grant"), except that substantial involvement is expected between the DOD and the recipient when carrying out the activity contemplated by the cooperative agreement. The term does not include "cooperative research and development agreements" as defined in 15 U.S.C. 3710a.

Grants and cooperative agreements are governed by the following regulations:

- a. OMB Circular A-21, "Cost Principles for Educational Institutions"
- b. OMB Circular A-87, "Cost Principles for State, Local and Indian Tribal Governments"
- c. OMB Circular A-102, "Grants and Cooperative Agreements with State and Local Governments"
- d. OMB Circular A-110, "Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations"
- e. OMB Circular A-122, "Cost Principles for Non-Profit Organizations"
- f. OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations"
- g. DOD Grant and Agreement Regulations (DODGARs), DOD 3210.6-R

Copies of OMB regulations may be obtained from:

Executive Office of the President Telephone: (202) 395-7332
Publications Service FAX Requests: (202) 395-9068
New Executive Office Building
<http://www.whitehouse.gov/WH/EOP/OMB/html/circular.html>
725 17th Street, N.W., Room 2200
Washington, DC 20503

An electronic copy of the DODGARs may be found at: <http://web7.whs.osd.mil/pdf/32106r/32106r.htm>.

NOTE: In accordance with DOD Directive 3210.6, the DODGARs may include rules that apply to other nonprocurement instruments, when specifically required in order to implement a statute, Executive Order, or Governmentwide rule that applies to other nonprocurement instruments, as well as to grants and cooperative agreements.

5. Procurement Contract - A legal instrument which, consistent with 31 U.S.C. 6303, reflects a relationship between the Federal Government and a State, a local government, or other recipient when the principal purpose of the instrument is to acquire property or services for the direct benefit or use of the Federal Government.

6. Historically Black Colleges and Universities - Institutions determined by the Secretary of Education to meet the requirements of 34 CFR Section 608.2.

7. Minority Institutions - Institutions defined as those meeting the criteria contained in 10 U.S.C. Section

2323(a)(1)(C), which reads: "minority institutions [as defined in Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)), which, for the purposes of this section, shall include Hispanic-serving institutions [as defined in Section 316(b)(1) of such Act (20 U.S.C. 1059c(b)(1))]"

8. Research Agreement - As used herein, the term refers to research contracts, grants, cooperative agreements, and other transactions.

9. Small Business Concern - A concern that is independently owned and operated, organized for profit, is not dominant in the field of operation in which it is bidding on Government contracts, and with its affiliates employs not more than 500 employees.

10. Small Disadvantaged Business Concern - A small business concern which is at least 51 per cent owned by one or more socially and economically disadvantaged individuals; or, in the case of any publicly owned business, at least 51 per cent of the stock of which is owned by one or more socially and economically disadvantaged individuals and whose management and daily business operations are controlled by one or more of such individuals.

USE OF COLOR IN PROPOSALS: All proposals received shall be stored as electronic images. Electronic color images require a significantly larger amount of storage space than black-and-white images. As a result, offerors' use of color in proposals should be **minimal** and used **only when absolutely necessary** for details. Do not use color if it is not necessary.

CURRENT AND PENDING SUPPORT:

1. Reporting all current, on-going projects, and pending support for proposals, including subsequent funding in the case of continuing award agreements is required, if applicable. All project support from whatever source must be listed. The list must include all projects requiring a portion of the principal investigator's and other senior personnel's time, even if they receive no salary support from the project(s).

2. The information should include, as a minimum: (i) the project/proposal title and brief description, (ii) the name and location of the organization or agency presently funding the work or requested to fund such work, (iii) the award amount or annual dollar volume of the effort, (iv) the period of performance, and (v) a breakdown of the time required of the principal investigator and/or other senior personnel.

APPENDIX A: LATE SUBMISSIONS AND WITHDRAWALS OF PROPOSALS

(a) Offerors are responsible for submitting proposals so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that the proposal is due.

(b) Any proposal received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless there is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers.

(c) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(d) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(e) Proposals may be withdrawn by written notice at any time before award. Withdrawals are effective upon receipt of notice by the Contracting/Grants Officer.

APPENDIX B: ACKNOWLEDGMENT RECEIPT

FROM:

Affix
Proper
Postage

TO: [affix label of contact]

Fold on this line and clip to Proposal Cover Page
Leave below blank—DoD to complete

Date:

Dear Proposer:

The proposal you submitted under the Broad Agency Announcement for Virtual Parts Engineering Research Center has been received at the Army Research Office:

_____ and will be evaluated, Control Number _____

_____ will not be evaluated for the following reason:

CLARIFICATIONS TO BAA DAAD19-00-R-0009
VIRTUAL PARTS ENGINEERING RESEARCH CENTER

The following clarifications are provided:

1. Part V, para. B.2. is changed to read as follows:

"2. Offerors **MUST** use **Microsoft WORD** to the greatest extent possible for complete proposals. Offerors **MUST** submit one paper copy of an **ORIGINALLY** signed Form 51 and Form 52A, to be received at this office no later than the date specified in B.2. Approved and completed electronically submitted proposals must be received by **4:00 PM EDST on Friday, August 11, 2000.** Approved, signed, and completed Forms 51 and 52A must be received by **4:00 PM EDST on Friday, August 11, 2000.** Do not submit the proposal to the individual TPOC; this could delay the receipt and review of the proposal. Proposals received after the deadline will be handled in accordance with Appendix A, Late Submissions.

Send Forms 51 and 52A to:

U. S. ARMY RESEARCH OFFICE
ATTN: AMSRL-RO-RI (00-R-0009)
P. O. Box 12211
RESEARCH TRIANGLE PARK, NC 27709-2211

Physical Address: U. S. ARMY RESEARCH OFFICE
ATTN: AMSRL-RO-RI (00-R-0009)
4300 SOUTH MIAMI BOULEVARD
DURHAM, NC 27703-9142

Please note that Forms 51 and 52A delivered by commercial carriers are considered "hand carried" and no exceptions can be made which allow these documents to be considered, if for any reason they are received after the deadline. Offerors are advised that on several recent occasions offerors' documents delivered by commercial carriers have been misrouted or delayed in shipment and as a result have been rejected without being evaluated."

2. Part V, para. B.3. is changed to read as follows:

"3. Proposals will be evaluated using the criteria set forth in Section VI. **To be eligible for consideration, electronic proposals and hardcopies of Forms 51 and 52A must be received by 4:00 PM EDST on Friday, August 11, 2000.**"(no other changes are made to this paragraph)

3. All references to Form 52 are deleted as not applicable. Only **Form 52A** is applicable to educational institutions and non-profit organizations.